

## WHAT IS CLAIMED IS:

1. A microscope comprising:
  - a first illumination device (20a) on one side of the microscope for providing a first illumination beam traveling along a first illumination beam path (10a); and
  - a second illumination device (20b) on another side of the microscope for providing a second illumination beam traveling along a second illumination beam path (10b);
  - wherein the first illumination beam and the second illumination beam have the same light frequency.
2. The microscope as defined in Claim 1, further comprising a third illumination device (19) for providing a third illumination beam traveling along a third illumination beam path (3).
3. The microscope as defined in Claim 1, wherein the light frequency of the first and second illumination beams is in the ultra-violet range.
4. The microscope as defined in Claim 3, further comprising an optical axis (8), wherein the first and second illumination beam paths (10a, 10b) are aligned coaxially with the optical axis (8) of the microscope.
5. The microscope as defined in Claim 4, wherein the first and second illumination devices (20a, 20b) are arranged symmetrically with respect to the optical axis (8).
6. The microscope as defined in Claim 2, further comprising a main objective (13), a first deflection element (12a) arranged above the main objective (13) in the first illumination beam path (10a), and a second deflection element (12b) arranged above the main objective (13) in the second illumination beam path (10b).

7. The microscope as defined in Claim 6, further comprising a deflection prism (5) in the third illumination beam path (3), wherein the first and second deflection elements (12a, 12b) are arranged at the height of the deflection prism (5).
- 5 8. The microscope as defined in Claim 6, wherein the first and second deflection elements (12a, 12b) are not parts of a composite deflection element.
9. The microscope as defined in Claim 7, wherein the first and second deflection elements (12a, 12b) and the deflection prism (5) are not parts of a composite deflection element.
- 10 10. The microscope as defined in Claim 7, wherein the first and second deflection elements (12a, 12b) and the deflection prism (5) are parts of a composite deflection element.
11. The microscope as defined in Claim 7, wherein at least one of the first and second deflection elements (12a, 12b) and the deflection prism (5) has non-  
15 zero focal power.
12. The microscope as defined in Claim 7, wherein the first and second deflection elements (12a, 12b) and the deflection prism (5) are replaceable to permit interchange with like elements of chosen focal power.
13. The microscope as defined in Claim 1, wherein each of the first and second  
20 deflection elements (12a, 12b) is a mirror.
14. The microscope as defined in Claim 13, wherein the mirror is a concave mirror (17a, 17b).
15. The microscope as defined in Claim 1, wherein each of the first and second deflection elements (12a, 12b) is a prism.

16. The microscope as defined in Claim 2, wherein the third illumination beam path (3) and the first illumination beam path (10a) intersect to form an angle of approximately 90 degrees.
- 5 17. The microscope as defined in Claim 16, wherein the third illumination beam path (3) and the second illumination beam path (10b) intersect to form an angle of approximately 90 degrees.
- 10 18. The microscope as defined in Claim 2, wherein the third illumination beam path (3) and the first illumination beam path (10a) intersect to form an angle between zero and 180 degrees, and the third illumination beam path (3) and the second illumination beam path (10a) intersect to form an angle between zero and 180 degrees.
19. The microscope as defined in Claim 1, wherein the microscope is a stereomicroscope.
- 15 20. The microscope as defined in Claim 1, wherein the microscope is a surgical microscope.
21. The microscope as defined in Claim 1, wherein the first and second illumination beams travel upward to an observed specimen for transmitted illumination of the specimen.